IV. Flood Protection Benefits

A. Existing and potential urban development in the floodplain

1. Describe the existing and potential urban development at the site and the nature of the flood risk.

The District's design standard for the Coachella Valley Stormwater Channel (CVSWC) is the Standard Project Flood (SPF) of 82,000 cubic feet per second. The proposed project area is a section of the channel where the SPF water surface elevation is significantly higher than adjacent grade resulting in levee conditions on both sides of the channel. These levees are subject to erosion and failure in a major flooding event. Currently, no new development is allowed adjacent to the channel unless flood risk is mitigated with structural flood control improvements. To date, this process has been cost prohibitive for proposed development. Development is beginning to encroach on this area. As development in the valley moves southeast, the project area will become increasingly important.

2. How often has flooding occurred historically?

Records indicate that large winter floods occurred in the Whitewater River basin dating back to 1825. There were eleven large events between 1825 and 1891, an average of one large storm every five years. Between 1909 and present, there have been approximately 27 large floods events, an average of 3.45 years between large events. Due to Global warming and the recent El Nino weather patterns pushing the jet stream south, it is anticipated that more storms will occur as they will be held up in the mountains surrounding the valley.

3. **Discuss the importance of improving the flood protection at this location. Include the number of people and structures that are affected by the flood hazard, and the flood impacts to highways and roads, railroads, airports, and other infrastructure, and agriculture.**

Increasing the flood protection in this location is crucial. The population in the area is estimated at 5000 but it is anticipated to increase dramatically over the next ten years. Riverside County is one of the fastest growing counties in California. In the past five years, an expressway and a large school, servicing grades one through twelve, have been constructed in the area. In a large event, the school and the expressway may both be subject to flooding and the agricultural loss would be detrimental to the valley as a whole. Also, there is the Thermal Airport that is being expanded and will be an international airport in the future.

B. Flood damage reduction benefits of the project

1. **Does the proposed project provide for transitory storage of floodwaters? What is the total community need for transitory storage related to this watercourse and what percentage of the total need does this project satisfy? What is the volume of water and how long is it detained?**

   Due to the high velocity of flows caused by the dramatic change in elevation, the Coachella Valley Stormwater Channel has high velocity flows with no detention basins. However, it does have a constant pilot channel that is outletted into the Salton Sea. The project involves deepening and widening the channel that will allow more capacity and storage of smaller flows. Deepening the channel will benefit the total community and will represent 100 percent of the total need.

2. **Describe any structural and non-structural flood damage reduction elements of the project.**

   Deepening the Coachella Valley Stormwater Channel is required to lower the hydraulic grade line below adjacent grade and widening the right-of-way will create an erosion buffer. This would eliminate levee conditions and prevent risk of levee failure in the future. It wil also prevent the need for concrete slope protecton.

3. **By what methods and by how much dollar value will the project decrease expected average annual flood damages?**

   By increasing the capacity of the stormwater channel, adjacent agricultural areas will have added protected. In past flood events, there has been extensive damage to agricultural lands. If the channel capacity is increased, the adjacent landowners will be protected on both sides of the channel. If one hundred acres of agricultural land on each side of the channel were flooded, the agricultural crop loss would be approximately $6 million. If the average time between floods of 3.45 years is used, the annual savings would be approximately $1,750,000 per year.

4. **How does the project affect the hydrologic and hydraulic conditions at the project site and adjacent properties?**

   a) **Will the project reduce the magnitude of a flood flow, which could cause property damage and/or loss of life?**

b) What are the effects of the project on water surface elevations during a flood event which could cause property damage or loss of life?

c) How are the flow velocities impacted by the project during a flood flow which could cause property damage and/or loss of life?

Our project entails the deepening and widening of the Coachella Valley Stormwater Channel. Hydrologically, this will increase the flow capacity of the channel which will decrease the flood risk to adjacent properties, thus causing less damage and decrease risk of loss of life. As stated, deepening the channel would lower the Standard Project Flood water surface elevation below adjacent grade to eliminate levee conditions and prevent the risk of levee failure. As the adjacent properties are lower than the levee system, the risk of property damage and loss of life would decrease dramatically.

C. Restoration of natural processes

1. Describe how any natural channel processes will be restored and describe how these natural processes will affect flood management and adjacent properties.

The project involves deepening and widening the channel which will increase flow capacities. The channel will be able to store more water before it overtops. Therefore, adjacent properties will have increased flood protection. Also, there will be adjacent areas that may be taken out of a flood zone. The current FEMA maps show the area as zone D, however a consultant is currently performing analysis that may change the FEMA maps.

2. Describe any upstream or downstream hydraulic or other effects (such as bank erosion, scour, sediment transport, growth inducement, etc.)

During a large event, there can be severe bank erosion. Widening of the Right-of-way will create an erosion buffer in larger storms and will eliminate the need for concrete bank protection, which is very costly.

3. If the project includes channel modification or bank protection work, will riprap or dredging be part of the design? If so, provide an analysis of potential benefits and impacts.

The project involves deepening the channel however, there is normally a small pilot channel carrying a continuous small flow. There may be small amounts of dredging in the flow area but the remaining portions of the channel are dry and easily excavated. There may be areas that require

some riprap slope protection to reduce erosion and sediment transport at various outlet areas or in areas where the channel turns.

D. Project effects on the local community

1. How will the project impact future flooding on and off this site?

Improving the channel to carry the Standard Project Flood will help reduce flood risk to areas adjacent to the channel.

2. How will the project affect emergency evacuation routes or emergency services and demands for emergency services?

By increasing channel capacity, the adjacent properties and emergency routes, such as the expressway, will not be subject to 100 year floodrisk. The schools in the area will not be directly impacted.

3. Explain how the project will comply with the local community floodplain management ordinance and the floodplain management criteria specified in the Federal Emergency Management Agency's National Flood Insurance Program.

The project area is currently shown as zone D on the FEMA maps. However, adjacent areas rely solely on nonstructural levess for flood protection. The project will eliminate the levee conditions and provide a non structural erosion buffer between the floodway and adjacent areas. A consultant is currently doing a detailed hydrologic analysis in the area and the project would be incorporated into the analysis in accordance with FEMA
regulations.

E. Value of improvements protected

1. What is the assessed value of structural improvements that will be protected by the project?

The adjacent land is mostly used for agricultural use and the structural improvement have been estimated at $1 million. The District has a Wastewater Reclamation Plant in the proximity of the channel. The estimated structural value for this plant is approximately $15 million.

2. What is the estimated replacement value of any flood control

facilities or structures protected by the project?

There is one bridge structure that will have additional protection by the project. The bridge is estimated at a value of $2 million. Also, there are four outlet flood control facilities that would have additional protection by the project. The facilities have an estimated value of $ 4 million.

V. Wildlife and Agricultural Land Conservation Benefits

A1. Importance of the site to regional ecology

1. **Describe any habitat linkages, ecotones, corridors, or other buffer zones within or adjacent to the site. How are these affected by the project.**

   The channel has a small continuous flow in the form of a pilot channel. This is a very narrow channel that conveys flows as is considered a "man-induced wetlands". There have been pupfish found in this pilot channel, but on rare occasions. Also, due to it's vegetation growth, in early spring, it has become a breeding area for the clapper rail bird.

   During construction, there are little affects to the pupfish or clapper rail because they can move upstream or downstream of the project and be in their normal environment. After construction, the pilot channel will be returned to it's original state and the wetland will be returned. If the channel is widened, the habitat area for the desert pupfish and the clapper rail may be increased.

2. **Is the site adjacent to any existing conservation areas?**

   The project outlets into the Salton Sea which is an existing conservation area. Areas of the Whitewater River delta area and along the west edge of the Sea contain sensitive natural communities.

3. **Describe any plans for aquatic restoration resulting in in-stream benefits.**

   The pilot channel will be reconstructed and it's original wetlands will be restored. As the project involves widening the channel, the area of wetland that will be restored will actually increase.

4. **Discuss any natural landscapes within the site that support representative examples of important, landscape-scale ecological functions (flooding, fire, sand transport, sediment trapping, etc.)?**

   Due to the low lying natural topography of adjacent land, the Coachella Valley Stormwater Channel is a levee condition. If the channel overtops, flooding can be severe due the adjacent land being low. Lowering the channel will reduce or eliminate levee conditions and therefore offering increased flood protection.

A2. Diversity of species and habitat types

1. **Does the site possess any:**
   - **i) areas of unique ecological and/or biological diversity?**
   - **ii) vegetative complexity either horizontally or vertically?**

   As stated, the project outlets into the Salton Sea. The Sea serves as a crucial component to many species.

   The channel possesses “induced wetlands” due to a constant flow in the pilot channel. The vegetation spreads extremely fast and provides much needed riparian habitat for many bird species.

2. **Describe habitat components including year-round availability of water, adequate nesting/denning areas, food sources, etc.**

   The Whitewater River Stormwater channel has a constant flow of water in the pilot channel which creates wetlands and provides food and nesting areas for both the Desert pupfish and the Yuma Clapper Rail.

3. **Describe any superior representative examples of specific species or habitats.**

   The Whitewater River Stormwater Channel provides core habitat for the desert pupfish and the crissal thrasher.

3. **Does the site contain a high number of species and habitat types? List and describe.**

   As stated, the core habitat in the project area is the desert pupfish

and the crissal thrasher. The area also protects none-core habitat for raparian species, specifically the Yuma Clapper Rail. It also provides non-core habitat for the burrowing owl, Coachella Valley round-tailed ground squirrel, and the Palm Springs pocket mouse.

4. **Does the site contain populations of native species that exhibit important subspecies or genetic varieties historically present prior to European immigration.**

   No, the site does not contain any populations of native species that exhibit important subspecies or genetic varieties historically present prior to European immigration.

A3. Ecological Importance of species and habitat types

1. **Discuss the significance of habitat types at this location and include any local, regional, or statewide benefits received by preserving or improving the area.**

   The Salton Sea and surrounding area is a main transition stop for a vast number of riparian species on the Pacific flyway.

2. **Does the site contain any significant wintering, breeding, or nesting areas? Does it fall within any established migratory corridors? What is the level of significance? How are these affected by the project?**

   The Yuma Clapper Rail is known to breed in early spring and tends to breed in the wetland areas of the pilot channel. Since the project involves widening the channel, the wetland area will be increased thereby increasing the potential breeding and nesting areas for the clapper rail.

3. **Describe any existing habitats that support any sensitive, rare, "keystone" or declining species with known highly restricted distributions in the region or state. Does the site contain any designated critical habitat? How are these affected by the project.**

   The Coachella Valley Stormwater Channel has "man-induced" wetlands down the center of the channel due to the steady flow in the pilot channel. As stated, the vegetation in the wetlands

is a known habitat for the Yuma Clapper Rail. The site is also a known habitat for desert pupfish which are recognized by the United States Fish and Wildlife Service and the California Fish and Game Department as an endangered species. As stated, the project will have no negative impacts on the wetland.

4. **What is the amount of shaded riverine aquatic (SRA) and riparian habitat to be developed, restored, or preserved?**

   The pilot channel is currently approximately a ten foot wide flowing channel with the vegetative riparian habitat approximately twenty feet wide. The project involves widening the channel which should increase the amount of riparian habitat by an estimated fifty percent and may increase SRA as well.

A4. Public benefits accrued from expected habitat improvements

1. **Describe present public use/access, if any. For instance, does or will the public have access for the purpose of wildlife viewing, hunting, fishing, photography, picnics, etc.**

   Recreational uses have not yet been examined but the Salton Sea is a main stop on the Pacific flyway and is also a popular bird watching location. In addition, this District has a history of permitting recreational uses of our Stormwater right-of-way.

2. **Discuss areas on the site that are critical for successfully implementing landscape or regional conservation plans. How will the project help to successfully implement the plans.**

   The California Department of Fish and Game is interested in developing riparian nodes along the alignment of the channel for breeding habitat for the yuma clapper rail and the crissal thrasher. The widening of the channel right-of-way will facilitate this effort and may provide a wildlife corridor for the lower valley.

3. **Describe the surrounding vicinity. Include the presence or absence of large urban areas, rapidly developing areas, and adjacent disturbed areas with non-native vegetation and other anthropogenic features. Do any surrounding areas detract from habitat values on the site?**

The adjacent property to the project is primarily agricultural land. However, development is quickly moving throughout the valley in a southeast direction toward the project area. The agricultural land is being slowly overcome by urban development but there are agricultural conservation methods in use. The surrounding areas to the project are still primarily agricultural and do not detract form the habitat values of the project.

4. **Describe compatibility with adjacent land uses.**

   Currently, adjacent land is agricultural and undeveloped, thus the acquisition of right-of-way is more feasible. As urbanization occurs, channel wetlands and habitat areas will become even more importatnt.

A5. Viability/sustainability of habitat improvements

1. **Describe any future operation, maintenance and monitoring activities planned for the site. How would these activities affect habitat values?**

   The Coachella Valley Water District has a memorandum of understanding with the California Department of Fish and Game for maintenance of the stormwater channel in a manner that minimizes negative impacts to habitat. Maintenance activities are monitored by both California Fish and Game and United States Fish and Wildlife service.

2. **Does the site contain large areas of native vegetation or is it adjacent to large protected natural areas or other natural landscapes (for example, a large stand of blue-oak woodland adjacent to public land.**

   The project outlets into the Salton Sea. The majority of the channel has willow, cattail, and other native riparian vegetation which grows rapidly and re-establishes well after any maintenance projects.

3. **Is the watershed upstream of the site relatively undisturbed or undeveloped and likely to remain so into the foreseeable future? Describe its condition.**

The watershed is the Whitewater River Basin. Flooding in the project area is usually alluvial fan flooding and largely due to tropical or winter storms commencing in the San Gorgonio, San Bernardino, and the Santa Rosa Mountains. The Bureau of Land Management and the United States Fish and Wildlife Service will not allow development in the majority of these mountainous areas.

4. **Describe any populations of native species or stands of native habitats that show representative environmental settings, such as soil, elevations, geographic extremes, or climatic conditions (for example, the wettest or most northerly location of a species within the state.)**

Given the scarcity of riparian habitat in the desert, all riparian habitat is considered important for these species, and is likely to contribute to the conservation of these species in their respective ranges. As stated, the project will only increase long term vegetative wetlands for these riparian habitats.

B. Agricultural Land Conservation Benefits

Our project involves increasing the capacity of an existing 600-foot wide stormwater channel. This may be done by deepening the channel, widening the right-of-way, and removing sediment build up. Deepening the channel will put the Standard Project Flood hydraulic grade line below the adjacent grade. Widening the channel right-of-way will ensure that an erosion buffer exists between adjacent property and the channel during larger flooding events. The construction project would not involve using any agricultural land. Currently, almost all adjacent land is used for agricultural purposes but as the urban development continues, the importance of agricultural conservation increases.

The Coachella Valley Water District adopted an Agricultural Water Management Planning Act effective May, 1990. The plan requires that where opportunity exists, water conservation practices for agricultural purposes shall be employed. The Coachella Valley received less than 3.5 inches of rain per year and therefore relies on Colorado River water for irrigation purposes. The District does not supply groundwater for agriculture.

The climate in the valley allows diverse crops to be grown year-round with many farmers triple cropping. The warm winters result in crops being available in winter months when most other areas have little agricultural production.

VI. Miscellaneous Benefits and Quality of Proposal

A. Size of request, other contributions, number of persons benefiting, cost of grant per benefited person

Estimated Total Project Cost	**$ 10,000,000.00**
Amount of FPCP Grant Funds Requested	**$ 5,000,000.00**
Amount of Local Funds Contributed	**$ 1,000,000.00**
Amount of In-kind Contributions	**0**
Additional Funding Sources	**0**
Number of Persons expected to benefit	**$ 10,000.00**
FP Corridor Funds per person benefited	**$ 500.00**

B. Quality of effects of water supply or water quality

1. Will water stored by the project provide for any conjunctive use, groundwater recharge, or water supply benefit?

The Coachella Valley Stormwater Channel outlets into the Salton Sea and provides much needed flow to ensure the Sea sustains an appropriate water level. The Sea provides habitat for many riparian species.

2. Does the project fence cattle out?

No, the project does not fence cattle out.

3. Does the project pass water over newly developed fresh water marsh?

No, the project does not pass water over a newly developed fresh water marsh. However, the project does pass water through the Salton Sea delta, a freshwater marsh which has been in existence since the seventies.

4. Does the project trap sediments?

Yes, having a wider pilot channel with more riparian nodes will result in dropping velocities and reducing sediment transport.

C. Quality of impact on underrepresented populations or historic or cultural resources

1. Does the project benefit underrepresented populations? Explain.

Yes, the Torres Martinez Indian Reservation have land in and adjacent to the channel from Avenue 66 to the Salton Sea. The project will further protect adjacent landowners from flash flooding. Much of the population in the lower valley is of hispanic descent, including most farmers.

2. Are historical or cultural resources impacted by the project? Explain.

The Salton Sea is both a historic and cultural resource but the project should have no direct impact to these areas. However, the stormwater channel provides much needed flow to maintain the ecological environment of the Salton Sea.

C. Technical and fiscal capability of the project team

1. Does the project require scientific or technical expertise, and if so, is it provided for in the grant proposal?

The project does not entail any specialized expertise. However, Bechtel will provide hydraulic analysis for the project at an estimated cost of $500,000.00. The project only involves excavation of deposited sediment to appropriate hydraulic levels.

2. Grant funds will be available in phases. What monitoring and reporting mechanisms are built into your administrative plan to track progress, initiation, and completion of successive phases?

The District constructs projects through a budgeted Capital Improvements Program. General Accepted Accounting Practices are used and the accounting is audited on a yearly basis. Monthly

staff meetings are held to track progress on each construction phase.

3. **Please outline your team's management, fiscal and technical capability to effectively carry out your proposal. Mention any previous or ongoing grant management experience you have.**

   The Coachella Valley Water District has a very effective engineering department with the technical capabilities to effectively carry out the project. We have carried out similar work in the past, within our department and have worked with various grants in the past.

D. Coordination and cooperation with other projects, partner agencies, and affected organizations and individuals

1. **List cost sharing and in-kind partners and any other stakeholders involved with your project and indicate the nature of their contribution, if any. Address the team's ability to leverage outside funds.**

   The Coachella Valley Water District would be the sole agency involved in the project. However, the key stakeholders would be the adjacent residents and agricultural land owners.

2. **Does your project overlap with or compliment ongoing activities being carried out by others (such as CALFED, local floodplain management programs, or a multiple objective regional or watershed plan)? If so, indicate any coordination that has taken place to date or is scheduled to take place in the future.**

   No, the project does not overlap or compliment ongoing activities of other agencies.

3. **Will this application, if approved, begin the next phase of a previously approved project or advance an ongoing project substantially toward completion?**

   The Whitewater River Program was essentially a consortium of projects to place concrete lining on the channel banks to combat erosion. This project would help increase channel capacity at the lower end of the Whitewater River Program.

4. **Describe how the proposal demonstrates a coordinated approach among affected landowners, local governments, and nonprofit organizations. If other entities are affected, is there written support for the proposal and a willingness to cooperate?**

   In the past, flooding within the project area has been severe at times. The agricultural lands have been affected detrimentally, causing huge losses in production and revenue. Residents in the area will be further protected from flooding and have shown their support for the need construction in the area. There are no other entities directly involved but the District has worked closely with the Coachella Valley Resource Conservation Service.